

## SECTION 32 92 19

**SEEDING FOR EROSION CONTROL****PART 1 - GENERAL****1.1 DESCRIPTION**

- A. Seeding shall consist of preparing ground, providing for sowing of seeds, mulching with straw, hay or cellulose fiber and other management practices along and across such areas as are designated on the plans and in accordance with these specifications. Note that a bid item for "SEEDING" does not constitute the requirement for fertilizer, mulch, and/or mesh unless the additional requirements are stated on the plans or special conditions.

**1.2 MEASUREMENT AND PAYMENT**

- A. **FERTILIZING:** Measure by the acre or as indicated in the proposal. Payment for work under this item will be made at the contract price bid for "Fertilizing for Erosion Control", which price is full compensation for all fertilizer, equipment, materials and labor necessary for fertilizing.
- B. **SEEDING:** Measure by the acre or as indicated in the proposal. Payment for work under this item will be made at the contract price bid for "Seeding for Erosion Control", which price is full compensation for all seeding, watering, equipment, materials and labor necessary for seeding.
- C. **STRAW MULCH SEEDING:** Measure by the square yard or as indicated in the proposal. Payment for work under this item to be made at the contract price for "Straw Mulch Seeding", which price to be full compensation for all fertilizer, seed, straw mulch, equipment, watering, materials and labor necessary for fertilizing and seeding.
- D. **FIBER MAT SEEDING:** Measure by the square yard or as indicated in the proposal. Payment for work under this item to be made at the contract price for "Fiber Mat Seeding", which price to be full compensation for all fertilizer, seed, fiber mat, watering, equipment, materials and labor necessary for fertilizing and seeding.
- E. **PAPER MESH SEEDING:** Measure by the square yard or as indicated in the proposal. Payment for work under this item is to be made at the contract price for "Paper Mesh Seeding", which price to be full compensation for all fertilizer, seed, paper mesh, watering, equipment, materials and labor necessary for fertilizing and seeding.

**1.3 SUBMITTALS**

- A. Source of seeds
- B. Seed Mix
- C. Fertilizer
- D. Manufacturer's data on Mulch Material
- E. Manufacturer's data on Fiber Mat
- F. Manufacturer's data on Paper Mesh

**PART 2 – PRODUCTS**

**2.1 MATERIALS**

- A. **GRASS SEED:** All seed must meet the requirements of the U.S. Department of Agriculture as set forth in the Rules and Regulations of the Federal Seed Act and the Texas Seed Law, including the labeling requirements for showing pure live seed, (PLS=purity x germination), name and type of seed. Seed furnished shall be of the previous season's crop and the date of analysis shown on each bag shall be within nine months of the time of use on the project. Each variety of seed shall be furnished and delivered in separate bags or containers. A sample of each variety of seed shall be furnished and delivered when directed by the Engineer. Seed which has been become wet, moldy or otherwise damaged in transit or storage will not be accepted. The amount of seed planted per acre, the type and the planting date shall be as indicated in the table below.

**TABLE I**

<u>Type</u>	<u>Rate of Application</u> <u>Type in Pounds per Acre</u>	<u>Planting Date</u>
Unhulled Bermuda Grass	20	Jan. 1 to Apr. 1
Hulled Bermuda Grass	12	Apr. 1 to Oct. 1
Mix Bermuda & Rye in the following Proportions:		
Unhulled Bermuda Grass	12	
Rye Grass	50	Oct. 1 to Jan. 1

- B. **FERTILIZER:** Use pellet or granular fertilizer with analysis of 16 percent nitrogen, 20 percent phosphoric acid and zero percent potash (or 10-10-5), unless otherwise required. The container labels shall show the analysis. Powdered or caked fertilizers shall not be permitted. Unless otherwise indicated on the plans, fertilizer shall be applied uniformly at an average rate of 400 pounds per acre.
- C. **STRAW MULCH:** Straw mulch shall be oat, wheat, or rice straw. Hay mulch shall be prairie grass, bermuda grass, oat, wheat or rice stems or other hay as pre-approved by the Engineer. Do not use straw containing Johnson grass or other noxious weeds and foreign materials. It shall be kept in a dry condition and shall not be molded or rotted. 164.5 Fiber Mat. Fiber mat to consist of machine produced mat of wood fibers, with consistent thickness throughout blanket. Use blanket with top side of netted twisted Kraft paper having high wet strength, or biodegradable extruded plastic mesh. Use blanket with a weight from 0.7 pounds per square yard to 1.0 pound per square yard.
- D. **PAPER MESH:** Use paper mesh consisting of Knitted construction of yarn with uniform openings interwoven with strips of biodegradable paper, furnished in rolls for suitable protection for outdoor storage. Use paper mesh of weight from 0.2 pounds per square yard to approximately 0.5 pounds per square yard.

## **PART 3 – EXECUTION**

### **3.1 CONSTRUCTION METHODS**

- A. **GENERAL:** Fertilizing & Seeding. After areas to receive fertilizing and seeding has been completed to the lines, grades and sections shown on the plans, apply fertilizer at the uniform average rate of 400 pounds per acre. Thoroughly mix upper 3 inches of top soil with fertilizer until a uniform mixture of fertilizer and top soil is obtained. Sprinkle areas to be seeded with water, using fine spray to avoid washing or erosion of soil. Broadcast seed with sowing equipment at the rate specified above, using care to obtain uniform distribution. After broadcasting, lightly rake seeds into soil to a depth not to exceed 1/2 inch. Complete seeding by rolling with roller developing 15 to 25 pounds per inch of tread. Keep seeded areas moist for a period of 10 days immediately following placement. When watering seeded areas, use fine spray to prevent erosion of seeds or soil. Reseed any areas damaged by erosion.
- B. **STRAW MULCH SOIL RETENTION BLANKET:**
1. Fertilizing & Seeding: After ditch or slope has been completed to lines, grades and cross-sections shown on the plans, apply fertilizer and seed in accordance with the above. When seed and fertilizer are to be distributed as water slurry, mixture is to be applied within 30 minutes after all components are placed in the equipment.
  2. Mulch Application: Immediately upon completion of planting of seed and fertilizing, spray straw mulch uniformly over the area at the rate of 1 1/2 to 2 tons of hay or 2 1/2 tons of straw per acre. Mulching machine shall inject asphaltic material into straw uniformly as it leaves the equipment at the rate of 0.05 to 0.10 gallons of asphalt per square yard of mulched area. When watering seeded areas, use fine spray to prevent erosion of seeds or soil. Reseed any areas damaged by erosion for any reason. The mulching operation shall immediately follow seeding and fertilizing as a continuous operation.
- C. **FIBER MAT OR PAPER MESH SOIL RETENTION BLANKET:**
1. Fertilizing and seeding shall be in accordance with the above.
  2. Fiber Mat or Paper Mesh Installation: Place fiber mat or paper mesh within 24 hours after seeding operations have been completed. Prior to placing, clear the area to be covered of all rocks or clods over 1 1/2 inches in diameter and all sticks or other foreign material which will prevent close contact of the blanket with the soil. Area shall be smooth and free of ruts or other depressions. If as a result of a rain, prepared seed bed becomes crusted or eroded, or if eroded places, ruts or depressions exist for any reason, rework soil until smooth and reseed such areas. After area has been properly prepared, lay fiber mat or paper mesh flat, smooth and loosely without stretching or crimping material. Apply materials with lengths running parallel to the flow of water. When more than one width is required, butt or overlap edges as required by the manufacturer. Hold the material in place by means of a wire staple driven into the soil at an angle to the surface. Staple material along each edge and in a grid pattern with minimum 3 foot centers each way. In ditches and on slopes, provided additional stapling as recommended by the manufacturer.

- D. CONTRACTOR MAINTENANCE & GUARANTEE PERIOD: Maintenance of seeded areas shall be 60 days after successful completion of punch list items and shall consist of water and weeding, repair of all erosion and any reseeded as necessary to establish a uniform stand of the specified grasses. Contractor shall guarantee growth and coverage of seeding under this contract to the effect that a minimum of 95% of the area planted will be covered with the specified grass after 60 days with no bare spots greater than 10 square feet. The Contractor shall be responsible for one (1) mowing every 2 weeks between the months of April to October. The Contractor shall also be responsible for one (1) mowing every three (3) weeks between the months of November to March. In addition, the Contractor shall water the entire sodded and hydro-mulched areas to a saturated depth of one (1) inch at least once a week between the months of April to September and at least once a month between the months of October to March. Contractor shall make a second application of seeding to bare areas not meeting specified coverage as determined by the Engineer. Such replanting is to be performed within 90 days of initial application and immediately upon notification by the Engineer to replant.

**END OF SECTION**